

1. FLOOD RISK CONSTRAINTS

- 1.1 The Piddle Brook, which is classified as an Environment Agency (EA) Main River, flows south through the west of the site. The Piddle Brook is included in the EA Flood Map for Planning and has Flood Zone 2 (Medium risk) and Flood Zone 3 (High risk) extents associated with it. EA data shows that this watercourse is recorded to have flooded, most recently in 2007.
- 1.2 A tributary of the Piddle Brook flows west across the north of the site, to the north of Pershore Farm and Long Lane Farm. This watercourse is partially included in the Flood Map for Planning and has some Flood Zone 2 and 3 extents associated with it.
- 1.3 A series of other minor watercourses is also present across the site. These have been excluded from the Flood Map or Planning. Many minor watercourses on site are represented as surface water flow routes on the EA Surface Water Flood Risk Mapping (see **Figure 1.1**).

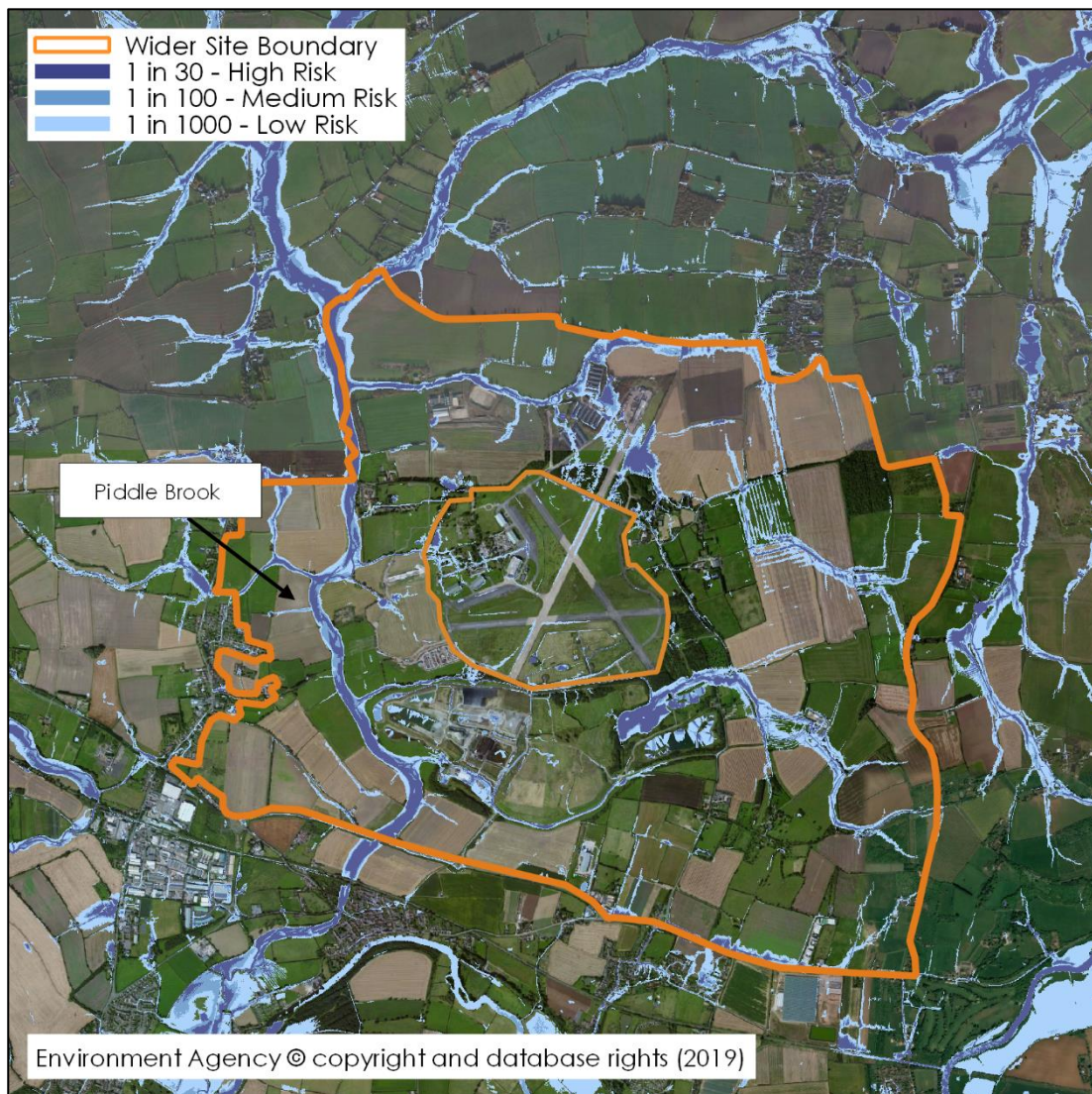


Figure 1.1: Environment Agency Surface Water Flood Risk Mapping

- 1.4 A high-risk surface water flow route, associated with a minor watercourse, is shown to flow northwest from the surrounding land towards the series waterbodies to the

southeast of Throckmorton Airfield. EA Surface Water Flood Risk Mapping shows several flow routes and a large area of high surface water flood risk around the sewerage treatment plant to the north of Throckmorton Airfield. The majority of Throckmorton Airfield is shown to be at very low surface water flood risk.

- 1.5 Watercourses on site will require an appropriate easement. In the first instance, a minimum 8m easement around any watercourses for maintenance access should be allowed, however this easement may be extended once a clearer picture of local flood risk is understood.
- 1.6 The Piddle Brook is shown to convey flows in the event of a breach of the Rotherdale Farm reservoir. However, the probability of such an event is considered to be low.
- 1.7 The proposed development site has also been assessed against a further range of potential flood risk sources including canals, groundwater and sewers. None of these flood sources have been found to represent a potential barrier to development.

2. DRAINAGE CONSIDERATIONS

- 2.1 An appropriate Surface Water Management Strategy which complies with the latest local and national advice will be implemented on the site to attenuate the increase in surface water runoff caused by development.
- 2.2 The surface water runoff from a development should be disposed of as high up the following hierarchy as reasonably practicable:
 - i. into the ground (infiltration);
 - ii. to a surface water body;
 - iii. to a surface water sewer, highway drain, or another drainage system;
 - iv. to a combined sewer.
- 2.3 A review of British Geological Survey (BGS) mapping shows the east of the site to be underlain by Charmouth Mudstone Formation and the land west of the Piddle Brook is shown to be underlain by Rugby Limestone Member. BGS mapping shows the majority of the site to have no superficial deposits present. A thin section of Alluvium deposits is shown to be present either side of the Piddle Brook and an area of Head (Clay, Silt, Sand and Gravel) is shown to exist to the northeast of The Orchards. The majority of the site is not expected to be favourable for infiltration. Although testing should be undertaken at the appropriate stage.
- 2.4 As a first option, infiltration should be considered for the disposal of surface water. If infiltration is not viable, the rate at which the runoff is discharged from the site will be restricted to the equivalent greenfield runoff rate, preventing an increase in flows leaving the site and thus ensuring that the development does not have a detrimental impact upon flood risk elsewhere.
- 2.5 Due to the existence of the Piddle Brook and a series of minor watercourses within the site, it is expected that watercourses will form the alternative outfall location, subject to levels and land ownership.

- 2.6 For the purpose of drainage and due to the natural topography, the site will need to be divided into a number of catchments. This catchment-based approach will treat and attenuate the surface water runoff as close to its source as possible.
- 2.7 Through the application of Sustainable Drainage Systems (SuDS), the additional surface water will be stored within the site and subjected to multiple stages of treatment to guarantee that the water quality in the wider drainage network is protected.
- 2.8 It is recommended that the necessary surface water storage volume is found within a series of above ground detention basins located at the lowest elevation of each catchment, between the proposed development and the outfall location. A clearer steer is required on the development proposals to allow the basins to be sized appropriately. The attenuation provided should be sized to include an allowance for climate change.
- 2.9 Wherever possible SuDS features should be above ground to enhance the aesthetic amenity of the development and provide valuable habitats for the local wildlife. In addition to detention basins, conveyance swales, permeable paving and bioretention areas should be incorporated where possible.
- 2.10 This initial drainage advice should be developed into a more detailed conceptual drainage strategy which should be created alongside the masterplan to ensure that a suitable area is designated for SuDS in line with local guidance.
- 2.11 It is envisaged that foul water will be discharged to the local public foul water sewer network. A Developer Enquiry will be submitted to Severn Trent Water to confirm capacity in their network at a later stage once more clarity on the development proposals is available. Due to the large size of the development, it is expected that STW will need to undertake capacity modelling works to determine the impacts on their assets.
- 2.12 If a gravity connection to a public foul sewer cannot be sought for any part of the development, foul pumping stations would be required. A 15m cordon sanitaire should be provided around the wet well of any pumping station, where no habitable dwellings can exist.